

DESCRIPTION OF *AEGESEUCOELA* BUFFINGTON, NEW NAME, WITH
NOTES ON THE STATUS OF *GRONOTOMA* FÖRSTER
(HYMENOPTERA: FIGITIDAE: EUCOILINAE)

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Abstract.—*Aegeseucoela* Buffington, a replacement name for *Moneucoela* Dalla Torre and Kieffer 1910, is described. *Aegeseucoela* contains two previously described species, *Aegeseucoela flavotincta* (Kieffer), **n. comb.**, and *A. grenadensis* (Ashmead), **n. comb.**, both of which are redescribed. The status of *Gronotoma* Förster is discussed, and the synonymy of *Eucoilidea* Ashmead with *Gronotoma* is formally documented. *Gronotoma nigricornata* Buffington, **new name**, is proposed to replace *Eucoilidea nigricornis* Kieffer 1908. Thirty-two **new combinations** in *Gronotoma* are given, and a checklist of the world species of *Gronotoma* is provided. Species in both *Aegeseucoela* and *Gronotoma* are common parasitoids of Agromyzidae (Diptera). *Aegeseucoela* is restricted to the New World tropics and subtropics, and *Gronotoma* is common in the Afrotropics, as well as Asia, Australia, and the Palearctic and Nearctic regions.

Key Words: *Aegeseucoela*, *Gronotoma*, Eucoilinae, Figitidae, Agromyzidae, Cynipoidea

Eucoiline wasps are endoparasitoids of cyclorrhaphous Diptera inhabiting a variety of habitats. These wasps are generally shiny black to dark reddish brown and range in size from 0.5 mm to 5 mm. The Eucoilinae contain 82 genera and nearly 1000 species, and are by far the most diverse of all figitid subfamilies (Ronquist 1999). Only two major bodies of work have attempted to classify all of the eucoiline genera (Dalla Torre and Kieffer 1910, Weld 1952), and for the most part, eucoiline classification schemes have resulted in a great deal of chaos (discussed in Nordlander 1982b). Presently available identification keys to eucoiline genera (Dalla Torre and Kieffer 1910, Weld 1952) are largely useless due to the reliance on a few key features, none of which are very dependable.

Nordlander (1976, 1978, 1980, 1981,

1982a, 1982b) was the first to treat eucoiline classification from a phylogenetic point of view. Through these works, clear generic and species level definitions were provided for the first time for a number of Palearctic and cosmopolitan taxa. Nordlander (1982b) summarized his findings by proposing informal genus groups defined by explicit morphological criteria, a first step towards a more logical and natural classification scheme.

An investigation into the phylogenetics and classification of one of these informal genus groups, the *Gronotoma* group (Buffington, unpublished data), resulted in the identification of a clade of eucoiline wasps of questionable taxonomic placement. Two previously described species were found to belong in this clade, described here as *Aegeseucoela*, and both species are rede-

scribed. Both species are restricted to the New World tropics and subtropics where they have been reared on numerous occasions from agromyzid flies (O. Lewis, unpublished data).

The first indication of the need for a new eucoiline genus was uncovered during an examination of Kieffer's eucoiline types. The type specimen of *Rhabdeucoela flavotincta* Kieffer did not possess any of the diagnostic features of the genus *Rhabdeucoela* Kieffer, and the species was most likely placed in *Rhabdeucoela* based on the relatively well-developed mesoscutal keel and large scutellar plate (neither of which are universally diagnostic features of *Rhabdeucoela*). Furthermore, *Rhabdeucoela flavotincta* was later moved to two different genera simultaneously by Weld (1952), *Moneucoela* Dalla Torre and Kieffer 1907 and *Tropideucoila* Ashmead 1903. This species is not readily accommodated in any of the three genera in which it was previously placed, and it was therefore coded separately in a phylogenetic analysis (Buffington, unpublished data), the results of which indicate none of the three genera (i.e., *Rhabdeucoela*, *Moneucoela*, and *Tropideucoila*) will remain monophyletic if this species is included within them. Therefore, *Aegeseucoela* is proposed to accommodate this species and a second species (discussed below).

The second species, *Diranchis grenadensis* Ashmead, also has a confusing taxonomic history. It was one of two species originally included in *Moneucoela* Dalla Torre and Kieffer 1910, which is itself a junior homonym of *Moneucoela* Dalla Torre and Kieffer 1907. Rohwer and Fagan (1917) apparently missed Kieffer's 1907 publication containing the description of *Moneucoela*, and determined that the genus was described as new in Dalla Torre and Kieffer (1910). Further, Rohwer and Fagan (1917) designated *Diranchis grenadensis* Ashmead as the type species of *Moneucoela* Dalla Torre and Kieffer 1910. Weld (1952) considered this a mistake, removed

grenadensis (Ashmead) from type status of *Moneucoela* Dalla Torre and Kieffer, and designated *tinctipennis* Kieffer (one of two species described in Kieffer 1907) as the type species of *Moneucoela* Dalla Torre and Kieffer 1907. Weld (1952) did not include *grenadensis* within the included species list for *Moneucoela*, resulting in the placement of the species as *incertae sedis*.

In their revision of *Moneucoela* Dalla Torre and Kieffer 1907, Diaz and Gallardo (1998) did not mention *Moneucoela* Dalla Torre and Kieffer 1910, nor the two species that were included in this genus when it was proposed (Dalla Torre and Kieffer 1910). Of the two species originally included in *Moneucoela* Dalla Torre and Kieffer 1910, one is congeneric with *flavotincta* and is redescribed below as *Aegeseucoela*. The second species belongs in *Zaeucoila* Ashmead (Buffington, unpublished data) and will be treated in a subsequent paper. Furthermore, since *grenadensis* Ashmead was designated as the type species for *Moneucoela* Dalla Torre and Kieffer 1910 by Rohwer and Fagan (1917), and *Moneucoela* Dalla Torre and Kieffer 1910 is preoccupied by *Moneucoela* Dalla Torre and Kieffer 1907, *Aegeseucoela* is proposed here as a replacement name for *Moneucoela* Dalla Torre and Kieffer 1910.

The second part of this paper is dedicated to a discussion on the status of the eucoiline genus *Gronotoma* Förster. *Gronotoma* resides within a basal portion of the eucoiline clade (Fontal et al., in preparation), as is the case with *Aegeseucoela* (though these two genera do not form a monophyletic group) (Buffington, unpublished data). Similar to *Aegeseucoela*, species of *Gronotoma* have all been reared from agromyzid flies (Scheffer unpublished data, Davidson 1963, Harding 1965, Viraktamath et al. 1993), mostly found within the genus *Melanagromyza* Hendel (Abe and Konishi 1995; Greathead 1969, 1971). The host preference for agromyzid flies appears to be a plesiomorphic feature within the Eucoilinae (Fontal et al. in preparation).

Gronotoma presently contains 47 described species (including synonymies proposed below), making this genus the most diverse of all eucoiline genera that specialize on agromyzid hosts. Species of *Gronotoma* have a worldwide distribution and the Afrotropics are particularly speciose (Quinlan 1986). Species are also very common in the Oriental (Abe and Konishi 1995), the Palearctic, and the Nearctic regions (Dalla Torre and Kieffer 1910, Weld 1952). Members of this genus are rarely recorded from the Neotropical Region but are frequently collected throughout subtropical Mexico (Buffington, unpublished data). Because of their potential usefulness in the biological control of pest Agromyzidae and the relatively high global diversity of species within the genus, the status of *Gronotoma* is reviewed and includes an important synonymy. Phylogenetic evidence (Buffington, unpublished data) supports the conclusions of Hedicke (1930) and Beardsley (1988) with respect to the synonymy of *Eucoilidea* Ashmead with *Gronotoma*. A world checklist of the species of *Gronotoma* is presented, with nomenclatural notes where applicable.

- BMNH The Natural History Museum, London, UK (S. Lewis).
 BPBM Bernice P. Bishop Museum, Honolulu, HI, USA.
 CAS California Academy of Sciences, San Francisco, CA, USA (W. Pulaski, R. Zuparko).
 CNC Canadian National Collection of Insects, Ottawa, Canada (J. Huber, J. Read, L. Masner).
 CUIC Cornell University Insect Collection, Ithaca, NY, USA (E.R. Hoebeke).
 IBPR Institute of Biology at the Academy of the People's Republic of Romania.
 ICIPE International Centre of Insect Physiology and Ecology, Nairobi, Kenya (R. Copeland).
 KPU Laboratory of Entomology, Kyoto

to Prefectural University, Kyoto, Japan.

- MRAC Musée Royale de l'Afrique Centrale, Tervuren, Belgium.
 USNM National Museum of Natural History, Smithsonian Institution, Washington, DC, USA (D. Smith).
 ZIN Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.
 ZMHB Zoologisches Museum, Humboldt Universität, Berlin, Germany (F. Koch).

Type specimens (holotypes and paratypes) were generously loaned to me by the CAS (containing a large portion of Kieffer's eucoiline types originally housed in Pomona), the USNM (containing many of Ashmead's and Weld's eucoiline types), the BMNH (containing Quinlan's eucoiline types), and the ZMHB (containing many of Förster's eucoiline types).

While sorting unidentified eucoilines in the AEIC in the summer of 2000, I found an extensive series of eucoilines conspecific with the type specimen of *Aegeseucoela flavotincta*, all collected from Costa Rica. Additionally, a long series of *Aegeseucoela flavotincta* and of *A. grenadensis* were sent to me for identification by O. Lewis (Silwood Park, UK); these specimens were of particular importance since host data accompanied each specimen. Unidentified specimens of African *Gronotoma* were generously loaned to me by Dr. Robert Copeland (ICIPE).

Institutions and individuals that donated ethanol preserved specimens for this study were: CNC; TAMU; and Dr. Owen Lewis, Imperial College at Silwood Park, UK. All SEM images utilized in this study were prepared digitally on a JOEL JSM-5600 SEM (operated by James Ehrman, Digital Microscope Facility, Mt. Allison University, Sackville, NB, Canada).

Terminology follows largely that of Weld (1921, 1952), Nordlander (1982b), Ron-

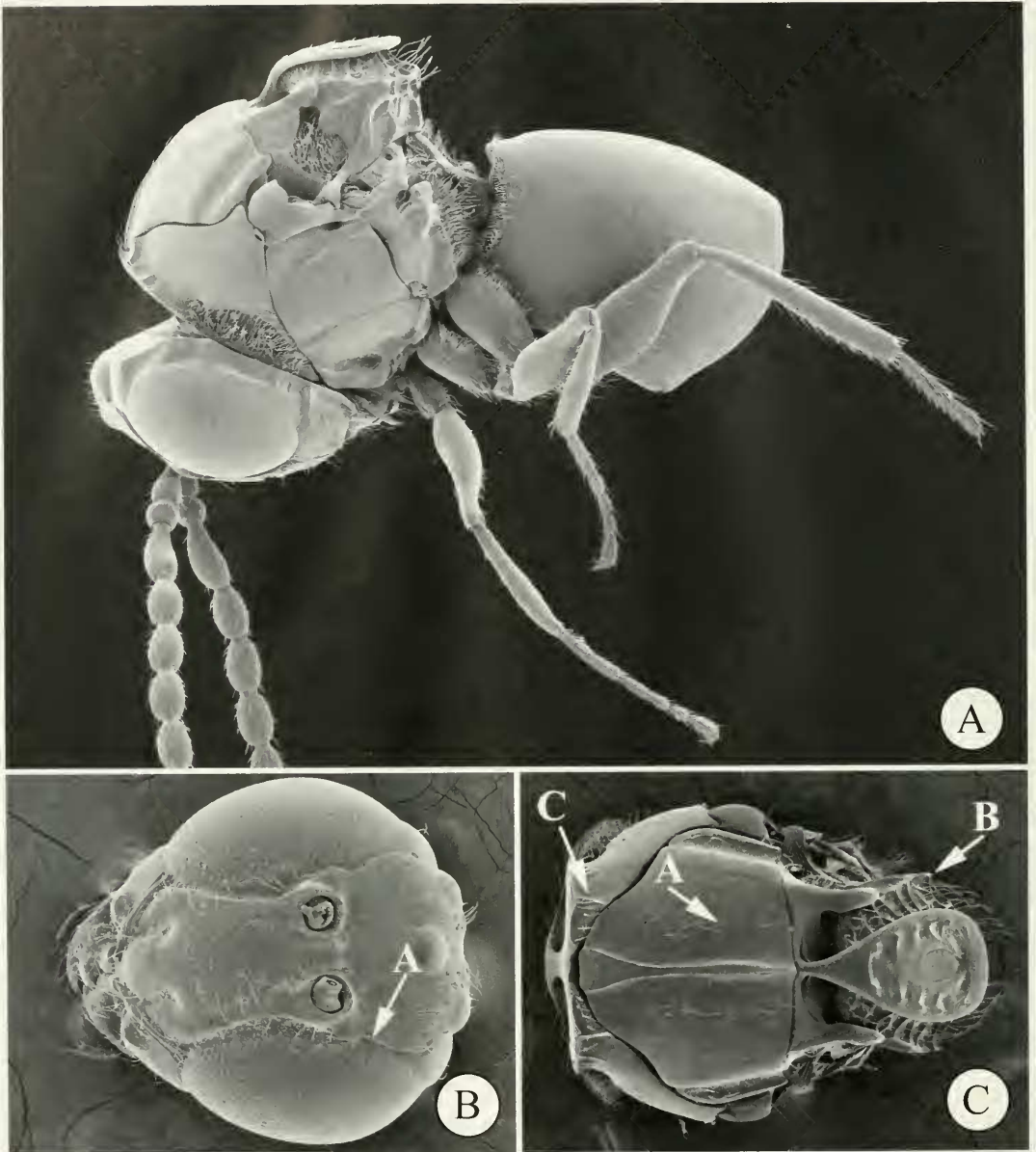


Fig. 1. *Aegeseucoela flavotincta*. A. Side view, habitus. B. Head, anterior view; A = orbital furrow complete to lateral ocellus. C. Mesosoma, dorsal view; A = parapsidal hair line; B = well developed lateral-dorsal projections of scutellum; C = pronotal triangle.

quist and Nordlander (1989), and Ronquist (1995), with the following modifications: parapsidal ridges is preferred over parapsidal furrows, as found in Weld (1952); orbital furrows and pronotal triangle are new terms and are defined as such below.

Orbital furrow (Fig. 1B).—A distinct

groove originating at either the lateral ocellus or the lateral side of the torulus (depending on the taxon) and lining the inner orbit of the eye, terminating at the clypeal margin after fusing with or paralleling the malar sulcus.

Pronotal triangle (Figs. 1C, 2C).—An

area on the dorsal surface of the pronotum bordered by the lateral pronotal carina, the pronotal plate and the anterior margin of the mesoscutum; found in genera with well developed pronotal ridges.

***Aegeseucoela* Buffington, new name**

Moneucoela Dalla Torre and Kieffer 1910: 103, 888. Type species: *Diranchis grenadensis* Ashmead, designated by Rohwer and Fagan 1917. Preoccupied by *Moneucoela* Dalla Torre and Kieffer 1907.

Diagnosis.—Orbital furrows originating either at lateral ocellus or lateral side of torulus. Genal carina well developed, often flanged posterior to compound eye. Mesoscutal keel present, at least anteriorly. Parapsidal ridges absent. Parapsidal hair lines present. Laterodorsal projections of scutellum present to absent. R1 never tubular or pigmented (radial cell open). Most similar to *Zaeucoila* and *Agrostocynips*, but differs by the presence of the extended orbital furrows (in some species), the presence of parapsidal hair lines and R1 incomplete.

Description.—*Head*: Nearly glabrous, with a few scattered setae along lower face, clypeus, inner orbits of compound eyes, malar space and gena; orbital hair patches present. Ventral $\frac{1}{4}$ of lower face with ad-medial clypeal furrows converging towards clypeus. Orbital furrows present, originating at lateral side of torulus or at lateral ocelli (species dependent), terminating at malar sulcus. Malar sulcus simple. Malar space smooth with a single prominent conical protuberance. Genal carina present, extending from malar space to lateral ocelli, often undulating posterior to compound eye.

Antenna: Female, 13 segments, moniliform, semi-clavate; segments 3–13 subequal in length; rhinaria present on segments 3–13. Male, 15 segments, filiform; rhinaria present on segments 3–15; segments 4–15 subequal in length. Segment 3 slightly longer than 4, curved outwardly, excavated laterally.

Pronotum: Pronotal plate wide, with setae along dorsal margin; slightly crested and bifurcate dorsally; pronotal fovea open. Pronotal triangle present (Figs. 1C, 2C). Pronotal impression absent. Lateral aspect of pronotum (below pronotal triangle) smooth and glabrous. Lateral pronotal carina absent.

Mesoscutum: Smooth with some setae. Mesoscutal keel present, reaching posterior margin of mesoscutum; tapering posteriorly. Parapsidal ridges absent. Parapsidal hair lines present (Figs. 1C, 2C). Parascutal impression incomplete, narrow. Notauli absent.

Mesopectus: Upper part and lower part of mesopleuron glabrous and smooth. Dorsal margin of mesopleural triangle well defined, rounded ventrally. Mesopleural carina simple. Lower part of mesopleuron bordered by distinct precoxal carina; anterior surcoxal depression present, reticulate.

Scutellum: Scutellar plate ranging from medium to large; mid pit placed centrally on plate; plate truncated posteriorly; nearly always bearing tubercles and setae on dorsal surface. Dorsal surface of scutellum reticulate; margined laterally and posteriorly. Laterodorsal projections present, present to nearly absent (Figs. 1C, 2B, 2C); posterior projections absent.

Metapectal-propodeal complex: Metapectus nearly glabrous with a few scattered setae posteriorly. Spiracular groove with a well defined dorsal margin and a well defined to rounded ventral margin. Posterior margin of metapectus ridged. Metapleural ridge absent; submetapleural ridge variable from present to absent. Anterior impressions of metepimeron and metepisternum present. Anteroventral cavity semi-circular and setose. Propodeum covered in long setae. Lateral propodeal carinae semi-parallel, bowed at junction with auxiliary propodeal carinae; auxiliary propodeal carinae indistinct. Nucha glabrous, reticulate.

Wings: Hyaline, with base of forewing sometimes darkened; usually setose basally, always setose apically. R1 incomplete, mar-

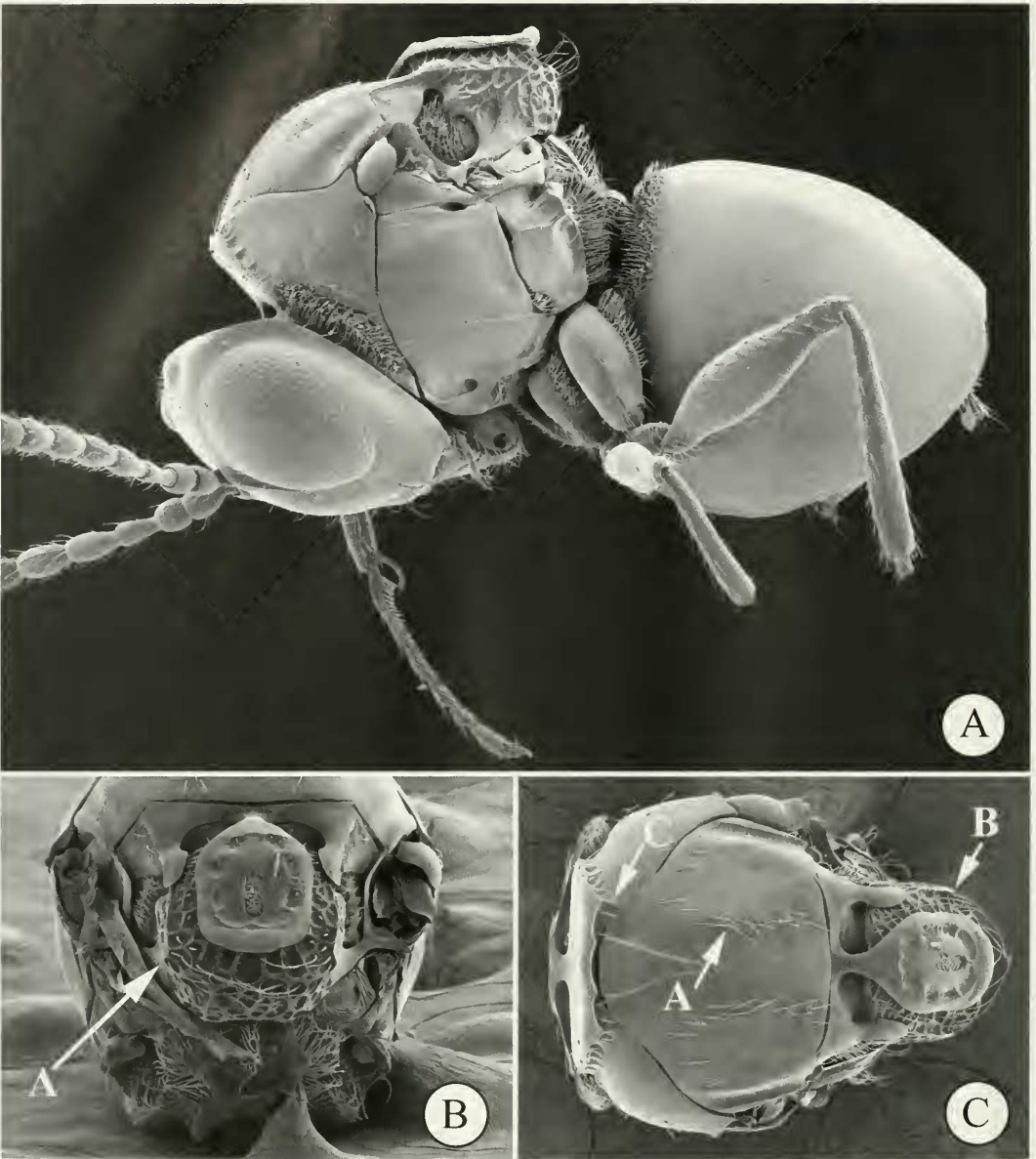


Fig. 2. *Aegeseucoela grenadensis*. A, Side view, habitus. B, Mesosoma, posterolateral view; A = reduced lateral projections of scutellum. C, Mesosoma, dorsal view; A = parapsidal hair line; B = reduced lateraldorsal projection of scutellum; C = pronotal triangle.

ginal cell as long as deep. Apical fringe present, short.

Legs: Fore and mid coxae about the same size, hind coxa about twice size of either fore or mid coxae. Fore coxa variably covered in long setae; mid coxa with anterior and posterior dorsoventral setal bands; hind

coxa with a prominent setal band on hind margin. Femora and tibiae sparsely setose; tarsomeres with dense, appressed setae. Length of hind tarsomere 1 equal to $0.5\times$ combined length of remaining hind tarsomeres.

Metasoma: Female: Sub-equal in size to

mesosoma. Base of syntergum with a hairy ring present, ranging from complete to dorsally bare, comprised of short, semi-apressed setae and longer erect setae; remainder of metasoma glabrous. Micropunctures present on posterior $\frac{1}{4}$ of syntergum, and on remaining terga. Terga posterior to syntergum directed posteroventrally, resulting in a 70 degree angle between syntergum and remaining terga. Male: As in female but terga posterior to syntergum abruptly angled ventrally, resulting in a 90 degree angle between syntergum and remaining terga.

Biology.—I have examined specimens reared by O. Lewis from species of agromyzid flies in the genera *Haplopeodes* Steyskal (on Solanaceae) and *Calycomyza* Hendel (on Fabaceae).

Distribution.—Neotropical Region: Costa Rica, Belize, Mexico (Veracruz, Tamaulipas), Panama. Nearctic Region: USA: AZ. Previously only known from Guatemala (*flavotincta*) and Grenada (*grenadensis*).

Etymology.—*Aeges*; from Greek mythology, the name of Athena's dreaded shield, used here to reference the broad, shieldlike pronotal plate present in this genus; *eucoela*, a suffix frequently used by J.J. Kieffer in his treatments of the Neotropical Eucolilinae.

Comments.—Though this genus is closely related to *Zaeucoila* and *Agrostocynips*, phylogenetic evidence (to be found in a forthcoming publication by the author) suggests that neither of these genera will remain monophyletic if the species of *Aegeseucoela* are placed within them. The parapsidal hair lines, extended lateral protuberances on the scutellum and incomplete R1 vein on the forewing are reliable autapomorphies for the genus, and reliable synapomorphies for the species within the genus.

INCLUDED SPECIES

Aegeseucoela flavotincta (Kieffer). n. comb. *Rhabdeucoela flavotincta* Kieffer

1908:46, holotype in CAS (#10537). Redescribed below.

Aegeseucoela grenadensis (Ashmead). n. comb. *Diranchis grenadensis* Ashmead 1900: 248, holotype in BMNH. Redescribed below.

Aegeseucoela flavotincta (Kieffer), new combination (Fig. 1)

Description.—As in description of genus except as follows: *Head*: Orbital furrows originating at lateral ocelli (Fig. 1B); genal carina continuing to near lateral ocelli, undulating posterior to compound eye (Fig. 1A). *Pronotum*: Pronotal crest prominent, bifurcate; pronotal ridge well developed. *Scutellum*: Scutellar plate large, nearly round; laterodorsal projections of scutellum sometimes well developed (Fig. 1C). *Metapleural-propodeal complex*: Submetapleural ridge usually well developed, connecting ventral margin of spiracular groove with posterior margin of mesopleuron. *Wings*: Base of forewing occasionally darkened; base of forewing ranging from glabrous to setose; forewing always setose apically. *Metasoma*: Hairy ring at base of syntergum often highly reduced (narrow), but always present.

Material examined.—Holotype ♀, Champerico, Guatemala. Coll. Baker. CAS #10537; the type specimen is in good condition, with Kieffer's original determination label (a large red label), the collection data labels, depository label and my determination label (slender white label). Additional material: BELIZE: Las Cuevas, Chiquibul Forest, Cayo District, 550 m, (various dates between Oct. 1997 and Sept. 1998), O.T. Lewis (13 ♀, 5 ♂). BOLIVIA: Yungas, XII.4.84, 2,400 m, Luis Peña (1 ♀); COSTA RICA: S. Rosa Park, Guan., various dates between 27.V.1976 and 10.VIII.1978, D.H. Janzen, Dry Hill (46 ♂, 90 ♀). MEXICO: Veracruz, 2 km SW Fortin, 8°54'N, 97°00'W, 2,700', 23.VI.1997, J.B. Woolley, screen sweep (1 ♀); Veracruz, El Crucero nr Puente Nacional, 19°20'N, 96°26'W,

13.VI.1997, L.A. Wilson & J.B. Woolley (1 ♀); Tamaulipas, 97 km Ciudad Victoria, Hwy 70, 3.VII.1986, G. Zolnerowich & R. Trevino (1 ♀). PANAMA: Colon Prov., 2 km S Sabanitas, 4–15.VII.1999, 120 m, Gillogly & Woolley, MT 99/033 (1 ♀). U.S.A: Arizona, Portal, 19–23.VIII.1987, H. & M. Townes (4 ♂).

Distribution.—Neotropical and southern Nearctic regions (see above list of localities).

Biology.—I have examined specimens reared from the agromyzid flies *Haplopeodes* sp. on *Solanum erianthum* D. Don (Solanaceae) and *Calycomyza hyptidis* Spencer on *Hyptis capitata* Jacq. and *H. urticoides* Kunth (Lamiaceae) (data from O. Lewis).

Aegeseucoela grenadensis (Ashmead),

new combination

(Fig. 2)

Description.—As in description of genus except as follows: *Head*: Orbital furrows originating at torulus; genal carina reduced, non-undulating, terminating at dorsal margin of compound eye (Fig. 2A). *Pronotum*: Pronotal crest reduced, sometimes absent; pronotal ridge sometimes absent. *Scutellum*: Scutellar plate ranging from medium to small; laterodorsal projections usually reduced/absent (Figs. 2B, 2C). *Metapectal-propodeal complex*: Submetapleural ridge completely reduced. *Wings*: Base of forewings occasionally darkened; usually entire forewing surface is setose. *Metasoma*: Hairy ring at base of syntergum thick and densely pubescent.

Material examined.—Holotype ♀: Balthazar (windward side), Grenada, West Indies, H.H. Smith (Coll.), BMNH; the type specimen is in poor condition, with the head plus thorax on one end of a pinned card, and the metasoma on the other end. The diagnostic features discussed below for this genus are all visible. Two 'type' labels are present on the specimen, one with a red circle and the second labeled 'BM Type Hym., y. 50'. Under this lies a label with 'paratype' printed on it. Below that is Ash-

mead's original determination label (in Ashmead's hand). Below that is the collection data, and finally below that, my designation label. Additional material: BELIZE: Las Cuevas, Chiquibul Forest, Cayo District, 550 m, (various dates between Oct. 1997 and Sept. 1998), O.T. Lewis (27 ♀, 20 ♂). MEXICO: Veracruz, 0.7 mi N Jilotepec, 19°36'N, 96°56'W, 3,680', screen sweep, 14.VI.1997, L.A. Wilson & J.B. Woolley (1 ♀). PANAMA, Prov. Colon, Quebrada Lopez, MT. 2–4.VII.1999, A. Gillogly (1 ♀). VENEZUELA: Merida, Merida City, 8°35'54"N, 71°08'42"W, 1860 m, sweep veg. along trib. to Chama R., 3.V.1981, L. Masner (1 ♀).

Distribution.—Neotropical Region (see above list of localities).

Biology.—I have examined specimens reared from the agromyzid flies *Calycomyza verbenivora* on *Verbena* sp. (Verbenaceae); *Calycomyza* c.f. *cassiae* (Frost) on *Senna cobanensis* (Britton) H.S. Irwin & Barneby (Fabaceae); *Haplopeodes* sp. on *Solanum erianthum* (Solanaceae) (data from O. Lewis).

Comments.—The type specimen of *Diranichis grenadensis* Ashmead, as noted above, is labeled 'paratype.' In the original description of *D. grenadensis*, Ashmead stated "described from 1 female specimen." Since the single specimen, the locality data, and the description all agree, this must be the holotype.

Gronotoma Förster

Gronotoma Förster 1869: 342, 346. Type species: *Gronotoma sculpturata* Förster 1869: 346, by original designation.

Eucoilidea Ashmead 1887: 150, 154. Type species: *Eucoilidea canadensis* Ashmead, by subsequent designation (Ashmead 1903); synonymy by Hedicke (1930) and Beardsley (1988).

Eucoilidea Dalla Torre 1893: 15; Kieffer 1901: 159. Emendation.

Afrostilba Benoit 1956: 544. Type species: *Afrostilba nitida* Benoit, by monotypy. Synonymy by Quinlan (1986).

Ashmead (1887) proposed the genus *Eucoilidea* to accommodate *E. longicornis* and *E. canadensis*, but did not specify a type species. Later, Ashmead (1903) designated *Eucoilidea canadensis* as type species. Dalla Torre (1893) emended the original Ashmead spelling of *Eucoilidea* to *Eucoelidea*, and cites the former in brackets. *Eucoelidea* was recognized in Kieffer (1901), and Kieffer (1907, 1909) described four new species (and two varieties) in '*Eucoelidea* Ashm.' None of Kieffer's treatments of *Eucoelidea* mention the name's emendation from *Eucoilidea*. Based on Article 33.2.1 of the ICZN (1999), *Eucoelidea* is an emendation of *Eucoilidea* and is not available. Burks (1979) reported two apparent misspellings of *Eucoilidea*, namely *Eucoilidia* (Kieffer 1907) and *Eucoelidia* (Kieffer 1909); after consulting the original references, neither of these misspellings were found to exist.

It is apparent from Ashmead's (1887) original description of *Eucoilidea* that he made no comparison with *Gronotoma* before proposing the new genus, and Hedicke (1930) was the first to propose *Eucoilidea* as a synonym of *Gronotoma*. Weld (1952) and Quinlan (1986, 1988), however, subsequently maintained *Eucoilidea* as distinct from *Gronotoma*. Beardsley (1988) again synonymized these two genera. Though the holotype of *E. canadensis* is in poor condition, with great portions of the body obscured by blackish glue, features such as the notauli, the lateral pronotal carinae and the scutellar plate are all clearly visible. Comparing these features with those found in *Gronotoma sculpturata* clearly indicate that indeed, *Eucoilidea* is a junior synonym of *Gronotoma*, supporting the decisions of Beardsley (1988) and Hedicke (1930).

Species of *Gronotoma* can be recognized by the following diagnostic features: lateral pronotal carina present (a distinct ridge, distal to the lateral margins of the pronotal plate, that give species in the this genus the appearance of having a large pronotal plate); notauli present and well-developed in nearly all species; scutellar plate large;

hairy ring at base of syntergum absent. Species of *Gronotoma* are most easily confused with *Diglyphosema* Förster, but easily distinguished from that genus by having the scutellum meeting the scutellar plate at an acute angle (meets at a 90 degree angle in *Diglyphosema*), and the scutellar plate not as elongate (though some species of *Gronotoma* tend to have an oval scutellar plate).

Previous works treating the synonymy of *Eucoilidea* with *Gronotoma* focused primarily on the type species; thus, as indicated in the list below, most of the described species have not been formally transferred to *Gronotoma*. Hence, 32 new combinations are proposed, mainly reflecting the taxonomic work on this genus by Weld (1952) and Quinlan (1986). Species for which type material (holotypes and/or paratypes) were examined are indicated by an *. The reader should also note that Kieffer (1901) did indeed treat four species in *Gronotoma* (and not *Eucoilidea*), i.e., *Gronotoma carinata* (Cresson), *G. minor* (Provancher), *G. nigricornis* Kieffer and *G. ovalis* (Thomson) (see in list below).

Included Species

adachiae Beardsley 1988: 39, holotype in BPBM.

advena* (Quinlan), **n. comb. *Eucoilidea advena* Quinlan 1986: 262, 263, holotype in MRAC, paratypes in BMNH.

allotriaeformis (Giraud). *Eucoila allotriaeformis* Giraud 1860: 142. *Gronotoma allotriaeformis*: Förster 1869: 346. Type depository presently unknown.

arcuata* (Kieffer), **n. comb. *Eucoelidea arcuata* Kieffer 1909: 65. Type in CAS.

bakeri* (Kieffer), **n. comb. *Eucoelidea bakeri* Kieffer 1907: 107. Type in CUIC.

bakeri* var. *cupularis* (Kieffer), **n. comb. *Eucoelidea bakeri* var. *cupularis* Kieffer 1907: 108. Type in CAS.

bakeri* var. *flavipes* (Kieffer), **n. comb. *Eucoelidea bakeri* var. *flavipes* Kieffer 1907: 108. Type in CAS.

bucca* (Quinlan), **n. comb. *Eucoilidea*

- bucca* Quinlan 1986: 263, holotype in MRAC, paratypes in BMNH.
- **canadensis* (Ashmead). *Eucoilidea canadensis* Ashmead 1887: 154. *Gronotoma canadensis*: Hedicke 1930; Beardsley 1988. Holotype in USNM.
- carinata* (Cresson). *Eucoila* ? *carinata* Cresson 1865: 6. *Gronotoma carinata*: Kieffer 1901: 159. Type depository presently unknown.
- **compressa* (Quinlan), **n. comb.** *Eucoilidea compressa* Quinlan 1986: 263, 264, holotype in MRAC, paratypes in BMNH.
- **conversa* (Quinlan), **n. comb.** *Eucoilidea conversa* Quinlan 1986: 264, holotype in MRAC, paratypes in BMNH and MRAC.
- **crenulata* (Kieffer), **n. comb.** *Eucoilidea crenulata* Kieffer 1908: 47. Type in CAS.
- **dilitata* (Kieffer), **n. comb.** *Eucoilidea dilitata* Kieffer 1907: 108. Type in CAS.
- domestica* Girault 1932: 3. Type depository presently unknown.
- **dubia* (Quinlan), **n. comb.** *Eucoilidea dubia* Quinlan, 1986: 264, 265, holotype in BMNH, paratypes in BMNH and MRAC.
- extraria* (Quinlan), **n. comb.** *Eucoilidea extraria* Quinlan 1986: 265, holotype and paratype in MRAC.
- **fetura* (Quinlan), **n. comb.** *Eucoilidea fetura* Quinlan 1986: 265, 266, holotype in MRAC, paratypes in BMNH.
- fulvicornis* (Hedicke). *Ganaspis fulvicornis* Hedicke 1913: 445. *Gronotoma fulvicornis*: Hedicke 1934: 704. Holotype and four paratypes in ZMHB.
- **furcula* (Quinlan), **n. comb.** *Eucoilidea furcula* Quinlan 1986: 266, holotype in BMNH, paratypes in BMNH and MRAC.
- **fuscipes* (Kieffer), **n. comb.** *Eucoilidea fuscipes* Kieffer 1907: 112. Type in CAS.
- gracilicornis* Cameron 1889: 15. Type depository presently unknown.
- guamensis* (Yoshimoto), **n. comb.** *Eucoilidea guamensis* Yoshimoto 1962a: 107, holotype and paratypes in BPBM.
- hiranoi* Abe and Konishi 1995: 309–311, holotype and paratypes in KPU.
- insularis* Ashmead 1895: 743, holotype in BMNH.
- lacerta* (Quinlan), **n. comb.** *Eucoilidea lacerta* Quinlan 1986: 266, 267, holotype and paratype in MRAC.
- lana* (Quinlan), **n. comb.** *Eucoilidea lana* Quinlan 1986: 267, holotype and paratype in MRAC.
- **leptis* (Quinlan), **n. comb.** *Eucoilidea leptis* Quinlan 1986: 267, 268, holotype in BMNH.
- longicornis* (Ashmead), **n. comb.** *Eucoilidea longicornis* Ashmead 1887: 154. Type depository presently unknown.
- maquilingensis* (Kieffer), **n. comb.** *Eucoilidea maquilingensis* Kieffer 1914: 184–185. Type depository presently unknown.
- **marcellus* (Quinlan), **n. comb.** *Eucoilidea marcellus* Quinlan 1986: 268, holotype in BMNH, paratypes in BMNH and MRAC.
- **mauri* (Quinlan), **n. comb.** *Eucoilidea mauri* Quinlan 1986: 268, 269, holotype and paratype in BMNH.
- melanagromyzae* Beardsley 1988: 40, holotype in BPBM.
- micromorpha* (Perkins). *Eucoilidea micromorpha* Perkins 1910: 676. *Gronotoma micromorpha*: Beardsley 1988: 38. *Eucoilidea rufula* Yoshimoto 1962b: 845, synonymy by Beardsley (1988), holotype and paratypes in BPBM.
- minor* (Provancher). *Eucoila minor* Provancher 1888: 398. *Gronotoma minor*: Kieffer 1901: 159. Type depository presently unknown.
- nigra* Ionescu 1963: 10, holotype in IBPR.
- ***nigricornata** Buffington, **new name.** *Eucoilidea nigricornis* Kieffer 1908: 48. Preoccupied by *Gronotoma nigricornis* Kieffer 1901: 159. Paratypes in CUIC.
- nigricornis* Kieffer 1901: 159. Type depository presently unknown.
- **nitida* (Benoit), **n. comb.** *Afrostilba nitida* Benoit 1956: 544, holotype in MRAC, paratypes in BMNH. *Eucoilidea nitida*: Quinlan 1986: 269.
- ovalis* (Thomson). *Cothonaspis ovalis* Thomson 1877: 817. *Gronotoma ovalis*: Kieffer 1901: 159. Type depository presently unknown.
- **pallida* (Quinlan), **n. comb.** *Eucoilidea*

pallida Quinlan 1986: 269–270, holotype in BMNH, paratypes in BMNH and MRAC.

parma* (Quinlan), **n. comb. *Eucoilidea parma* Quinlan 1986: 270, holotype in BMNH, paratypes in BMNH and MRAC.
parvula Kieffer 1910: 533. Type depository presently unknown.

perangusta* (Quinlan), **n. comb. *Eucoilidea perangusta* Quinlan 1986: 270, 271, holotype and paratypes in BMNH.

quadrisulcata (Hedicke), **n. comb.** *Eucoilidea quadrisulcata* Hedicke 1922: 229. Two syntypes in ZMHB.

rufipes (Gillette), **n. comb.** *Eucoilidea rufipes* Gillette 1891: 205. Type depository presently unknown.

**sculpturata* (Förster), *Eucoila sculpturata* Förster 1855: 257. *Gronotoma sculpturata*: Förster 1869: 342, 346. Holotype in ZMHB.

**seychellensis* Kieffer 1911: 309. Holotype and paratypes in BMNH.

ugonjaevi Belizin 1973: 22, holotype in ZIN; not examined but characters presented in the original description suggest this species probably belongs in *Nordlanderia*.

trulla* (Quinlan), **n. comb. *Eucoilidea trulla* Quinlan 1986: 271, holotype in BMNH, paratype in MRAC.

tyrus* (Quinlan), **n. comb. *Eucoilidea tyrus* Quinlan 1986: 271, holotype in BMNH.

urundiensis* (Benoit), **n. comb. *Eucoilidea urundiensis* Benoit 1956: 548, holotype in MRAC, paratypes in BMNH and MRAC.

Additional material examined.—Sp. 1: Nearctic Region: Canada (AB, BC, MB, ON, QU, PQ); USA (IL, MD, NY, PA, TX, VA). Neotropical Region: Mexico (Tamaulipas, Chiapas).

Sp. 2: Nearctic Region: Canada (AB, MB); USA (AZ, CA, FL, IN, MO, NC, NM, PA, TN, TX, WA). Neotropical Region: Mexico (Veracruz); Venezuela (Merida).

Sp. 3: Nearctic Region: Canada (ON); USA (NC).

Specimens of other species from: Neotropical Region: Mexico (Oaxaca, Guerrero); Ecuador: Nicaragua. Afrotropical Region: Uganda; Zaire; Kenya.

ACKNOWLEDGMENTS

I thank Dr. Bob Wharton and Dr. Jim Woolley for guidance in this project at Texas A&M University; I also thank Dr. Göran Nordlander and Dr. Fredrik Ronquist for additional guidance in understanding eucoilid morphology, taxonomy, and evolution. Special thanks to all those individuals listed under "Materials and Methods" who assisted with the loan of material for my examination, including James Ehrman for preparation of SEM's and Dr. Owen Lewis for the use of host records. Additional thanks to Dr. Kathy Schick, Dr. David Smith, and one anonymous reviewer for critical comments on an earlier version of this manuscript. Finally, thanks to my wife for her unending support of my research. This research was entirely funded by the NSF PEET Project, #DEB9712543, awarded to Drs. Wharton and Woolley. All research was carried out in the Department of Entomology, Texas A&M University.

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